

WHAT IS CLAIMED IS:

1. A reflector comprising:

5 a first array antenna that is formed of an arrangement of a plurality of first antenna elements;

a second array antenna that is placed approximately parallel with said first array antenna and formed of an arrangement of a plurality of second antenna elements;

10 a first propagation path that connects one end of said first array antenna and one end of said second array antenna to propagate an electromagnetic wave; and

a second propagation path that connects the other end of said first array antenna and the other end of said second array antenna to propagate an electromagnetic wave.

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2. The reflector according to claim 1, wherein said plurality of first antenna elements of said first array antenna and said plurality of second antenna elements of said second array antenna are provided to transmit and receive different polarized waves.

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3. The reflector according to claim 2, wherein said plurality of first antenna elements and said plurality of second antenna elements are provided to transmit and receive linearly polarized waves of different directions.

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4. The reflector according to claim 3, wherein said plurality of first antenna elements include a plurality of first inclined slots, said plurality of second antenna elements include
5 a plurality of second inclined slots, and said plurality of first inclined slots and said plurality of second inclined slots are arranged in different directions.

5. The reflector according to claim 3, wherein each of
10 said plurality of first and second antenna elements is a linear polarization antenna.

6. The reflector according to claim 1, wherein said plurality of first antenna elements of said first array antenna
15 and said plurality of second antenna elements of said second array antenna are provided to transmit and receive a same polarized wave.

7. The reflector according to claim 5, wherein said
20 plurality of first antenna elements and said plurality of second antenna elements are provided to transmit and receive a circularly polarized wave and to propagate the received electromagnetic waves in a same direction.

25 8. The reflector according to claim 6, wherein said

plurality of first antenna elements include a plurality of first inclined slot pairs, said plurality of second antenna elements include a plurality of second inclined slot pairs, and said plurality of first inclined slot pairs and said plurality of second inclined slot pairs are arranged in a same direction.

9. The reflector according to claim 6, wherein each of said plurality of first and second antenna elements is a circular polarization antenna.

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10. The reflector according to claim 1, further comprising an information adding device that is provided in at least one of said first propagation path and said second propagation path and that adds information to the electromagnetic wave.

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11. A reflector comprising:

a plurality of array antenna pairs each comprising first and second array antennas arranged approximately parallel, said first and second array antennas of each said array antenna pair comprising a plurality of first and second antenna elements, respectively;

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a plurality of first propagation paths that respectively connect one-side ends of said first and second array antennas of said plurality of array antenna pairs to propagate

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electromagnetic waves; and

a plurality of second propagation paths that respectively connect the other-side ends of said first and second array antennas of said plurality of array antenna pairs to propagate
5 electromagnetic waves.

12. The reflector according to claim 11, wherein said plurality of array antenna pairs have guide wavelengths shorter than a free-space wavelength and intervals between said plurality
10 of first antenna elements and intervals between said plurality of second antenna elements differ among said plurality of array antenna pairs.

13. The reflector according to claim 11, wherein said
15 plurality of array antenna pairs have a guide wavelength longer than a free-space wavelength and a waveguide structure parameter differs among said plurality of array antenna pairs.

14. The reflector according to claim 11, wherein each
20 of said plurality of first and second antenna elements is a linear polarization antenna, and in each said array antenna pair, said plurality of first antenna elements of said first array antenna and said plurality of second antenna elements of said second array antenna are provided to transmit or receive linearly polarized
25 waves of different directions.

15. The reflector according to claim 12, wherein each of said plurality of first and second antenna elements is a circular polarization antenna, and in each said array antenna pair, said
5 plurality of first antenna elements of said first array antenna and said plurality of second antenna elements of said second array antenna are provided to propagate electromagnetic waves in a same direction when receiving a circularly polarized wave of a same rotating direction.